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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

LAVARIAS, ARNEL C

ART UNIT PAPER NUMBER

2872

DATE MAILED: 11/19/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/004,142

Applicant(s)

OCKENFUSS ET AL.

Examiner

Arnel C. Lavarias

Art Unit

2872

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 September 2003.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10, 12-15, 22-26 and 29-32 is/are pending in the application.
- 4a) Of the above claim(s) 1-10 and 12-15 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 22-26 and 29-32 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 November 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. The amendments to the specification of the disclosure in Paper No. 12, dated 9/10/03, are acknowledged and accepted. In view of these amendments, the objections to the drawing and the specification in Sections 4-5 of Paper No. 9, dated 7/11/03, are respectfully withdrawn.
2. The amendments to Claim 22 in Paper No. 12, dated 9/10/03, are acknowledged and accepted. In view of these amendments, the claim objections in Section 8 of Paper No. 9, dated 7/11/03, are respectfully withdrawn.

Response to Arguments

3. The Applicants argue that newly amended Claim 22 and Claims 29-30, 32 are not unpatentable under the judicially created doctrine of obviousness-type double patenting over Claims 1, 2, and 4 of U.S. Patent No. 6469847. In view of the amendments made Claim 22, the Examiner agrees, and respectfully withdraws the rejections to Claims 22, 29-30, 32 in Section 10 of Paper No. 9, dated 7/11/03.
4. The Applicants argue that, with respect to newly amended Claim 22, Fan et al., Chung et al., and Shirasaki et al. all fail to teach or reasonably suggest an optical filter assembly, including a multilayer thin-film interference filter originally formed on a substrate and released therefrom to eliminate stresses therebetween. After a review of the Fan et al., Chung et al., and Shirasaki et al. references, the Examiner agrees, and respectfully

withdraws the rejections to Claims 22-26, 29-32 in Sections 11-16 of Paper No. 9, dated 7/11/03.

5. Claims 22-26, 29-32 are rejected as follows.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fernandez et al. (U.S. Patent No. 5080739) in view of Fan et al. (U.S. Patent No. 6469847), of record.

Fernandez et al. discloses an optical filter assembly (See for example Figures 3, 6) comprising a first (See 14 in Figure 3) frame member having a first planar surface that substantially surrounds a central opening (See 18 in Figure 3), the first frame member having a first coefficient of thermal expansion (The Examiner notes that the material of the frame will inherently have a coefficient of thermal expansion); a multilayer thin-film interference filter (See 10 in Figure 3) originally formed on a substrate (See 12 in Figure 3) and released therefrom to eliminate stresses therebetween (See Figures 1-3; col. 2, line 67-col. 3, line 50), having a first surface attached to the planar surface of the first frame member to define an unobstructed optical aperture through the multilayer interference filter, the multilayer interference filter having a second coefficient of thermal expansion (The Examiner notes that the materials of the multilayer interference filter will inherently

have a coefficient of thermal expansion). Fernandez et al. lacks the coefficient of thermal expansion of the multilayer interference filter being smaller than the coefficient of thermal expansion of the frame such that the frame member applies stress to the multilayer interference filter during changes in temperature, thereby reducing a shift in the center wavelength transmitted by the multilayer interference filter. However, Fan et al. similarly discloses a filter that comprises a first metal (See Claim 2) frame member having a first planar surface that substantially surrounds a central opening (See Claims 1 and 4), the first frame member having a first coefficient of thermal expansion (Claim 1, lines 12-15; Claim 4); a multilayer interference filter free of any substrate having a first surface attached to the planar surface of the first frame member to define an unobstructed optical aperture, the multilayer interference filter having a second coefficient of thermal expansion smaller than the first coefficient of thermal expansion (Claim 1, lines 2-11), whereby the frame member applies stress to the multilayer interference filter during changes in temperature, thereby reducing a shift in the center wavelength transmitted by the multilayer interference filter (Claim 1, lines 16-25). Fan et al. additionally discloses the first frame member formed from a material having a coefficient of thermal expansion of at least $140 \cdot 10^{-7}/K$ (See Claim 3). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have the coefficient of thermal expansion of the multilayer interference filter be smaller than the coefficient of thermal expansion of the frame such that the frame member applies stress to the multilayer interference filter during changes in temperature, thereby reducing a shift in the center wavelength transmitted by the multilayer interference filter, as taught by Fan et

al., in the optical filter assembly of Fernandez et al., for the purpose of providing partial temperature stabilization of the center wavelength of the multilayer thin-film interference filter.

8. Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fernandez et al. in view of Fan et al.

Fernandez et al. and Fan et al. discloses the invention as set forth above in Claim 22. Fernandez et al. lacks the first frame member being annular. However, Fan et al. teaches that the counteracting frame used in the optical filter is in the form of a ring (See Abstract; 38 in Figure 1; col. 1, line 66-col. 2, line 3). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have the first frame member be annular, as taught by Fan et al., in the optical filter assembly of Fernandez et al., for the purpose of providing even and uniform stretching around the edges of the filter layer as the temperature changes.

9. Claims 30 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fernandez et al. in view of Fan et al.

Fernandez et al. and Fan et al. discloses the invention as set forth above in Claim 22. Fernandez et al. lacks the first frame member comprising metal and having a coefficient of thermal expansion of between $103 \cdot 10^{-7}/K$ and $179 \cdot 10^{-7}/K$. However, Fan et al. teaches that the counteracting ring used in the optical filter is made of a metal material having a coefficient of thermal expansion of at least $140 \cdot 10^{-7}/K$ (See Claims 2-3). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have the first frame member comprise metal and have a coefficient of

thermal expansion of between $103 \cdot 10^{-7}/K$ and $179 \cdot 10^{-7}/K$, as taught by Fan et al., in the optical filter assembly of Fernandez et al., for the purpose of providing a higher change in length of the multilayer thin film, allowing a wider range of temperatures to be compensated for.

10. Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fernandez et al. in view of Fan et al.

Fernandez et al. in view of Fan et al. discloses the invention as set forth above in Claims 22 and 30, except for the first frame member being stainless steel. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the first frame member be comprised of stainless steel, since it has been held to be within the ordinary skill of worker in the art to select a known material on the basis of its suitability for the intended use. One would have been motivated to have the first frame member be comprised of stainless steel for the purpose of providing strength and rigidity to the filter assembly. *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945).

11. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fernandez et al. in view of Fan et al. as applied to Claim 22 above, and further in view of Shirasaki (U.S. Patent No. 5982488), of record.

Fernandez et al. in view of Fan et al. discloses the invention as set forth above in Claim 22, except for the optical filter assembly further comprising a second frame member with a central opening therethrough attached to a second surface of the multilayer interference filter, wherein the optical aperture through the multilayer

interference filter is substantially unobstructed. However, Shirasaki discloses an optical filter including a first (See 501, 505 in Figure 6(A)) frame member having a first planar surface that substantially surrounds a central annular opening (See 505 in Figure 6(A); Figure 6(B); col. 10, lines 7-33), the first frame member having a first coefficient of thermal expansion (See col. 10, lines 7-16); an etalon filter having a first surface attached to the planar surface of the first frame member to define an unobstructed optical aperture (See 201, 202 in Figure 6(A)), the multilayer thin-film interference filter having a second coefficient of thermal expansion smaller than the first coefficient of thermal expansion (See col. 10, lines 7-16), whereby the frame member applies stress to the multilayer interference filter during changes in temperature, thereby reducing a shift in the center wavelength transmitted by the multilayer interference filter (See col. 5, line 32-col. 8, line 20). Shirasaki additionally discloses a second frame member (See 501, 504 in Figure 6(A)) with a central annular opening therethrough attached to a second surface of the multilayer interference filter, wherein the optical aperture through the multilayer interference filter is substantially unobstructed. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have the optical filter assembly further comprise a second frame member with a central opening therethrough attached to a second surface of the multilayer interference filter, wherein the optical aperture through the multilayer interference filter is substantially unobstructed, as taught by Shirasaki, in the optical filter assembly of Fernandez et al. in view of Fan et al., for the purpose of protecting the multilayer thin-film interference filter, as well as more uniformly distributing the tensile stress applied by the frames onto the multilayer thin-

film interference filter, thus more efficiently compensating for changes in optical distance of the filter with changes in temperature.

12. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fernandez et al. in view of Fan et al. as applied to Claims 22-23 above, and further in view of Shirasaki.

Fernandez et al. in view of Fan et al. and Shirasaki discloses the invention as set forth above in Claims 22-23, except for the second frame member also being annular. It is noted that Shirasaki discloses that the first and second frame members (See 501/504, 501/505 in Figures 6(A), 6(B)) generally have the same shape. Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to also have the second frame member be annular in the optical filter assembly of Fernandez et al. in view of Fan et al., and further in view of Shirasaki, for the purpose of providing even and uniform stretching around the edges of the filter layer and on both sides of the filter layer as the temperature changes.

13. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fernandez et al. in view of Fan et al. as applied to Claims 22-23 above, and further in view of Shirasaki.

Fernandez et al. in view of Fan et al., and further in view of Shirasaki discloses the invention as set forth above in Claims 22-23, except for the second frame member also being made of stainless steel. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the second frame member also be comprised of stainless steel, since it has been held to be within the ordinary skill of

worker in the art to select a known material on the basis of its suitability for the intended use. One would have been motivated to have the second frame member also be comprised of stainless steel for the purpose of providing strength and rigidity to the filter assembly. *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945).

14. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fernandez et al. in view of Fan et al. as applied to Claims 22-23 above, and further in view of Shirasaki.

Fernandez et al. in view of Fan et al. and Shirasaki discloses the invention as set forth above in Claims 22-23, except for the second frame member also comprising a material having a coefficient of thermal expansion of between $103 \cdot 10^{-7}/K$ and $179 \cdot 10^{-7}/K$.

However, Shirasaki additionally discloses the first and second frame members formed from a material having a coefficient of thermal expansion of at least $140 \cdot 10^{-7}/K$ (See col. 7, lines 18-42). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have the second frame member also comprise a material having a coefficient of thermal expansion of between $103 \cdot 10^{-7}/K$ and $179 \cdot 10^{-7}/K$, as taught by Fernandez et al. in view of Fan et al., and further in view of Shirasaki, for the purpose of providing a higher change in length of the multilayer thin film, allowing a wider range of temperatures to be compensated for.

Conclusion

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent No. 4870648 to Ceglio et al.

Ceglio et al. is being cited to evidence an x-ray beamsplitter element (See for example Figure 1), wherein a beamsplitting optical film (See 12 in Figure 1) comprising a wavelength selective multilayer thin film (See Abstract) is formed on a substrate (See 16 in Figure 1) having an optical aperture. The central portion of the multilayer thin film is released. However, Ceglio et al. lacks a separate frame member to which the multilayer film is attached.

16. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

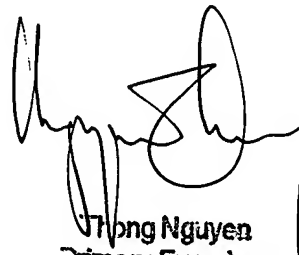
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17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Arnel C. Lavarias whose telephone number is 703-305-4007. The examiner can normally be reached on M-F 8:30 AM - 5 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew Dunn can be reached on 703-305-0024. The fax phone number for the organization where this application or proceeding is assigned is 703-308-7722.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1782.

Arnel C. Lavarias
11/7/03



Thong Nguyen
Examiner